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DEBT/ASSET RATIOS OF OHIO FARMERS:
An Examination of Associated Factors

by

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ABSTRACT

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This paper describes the incidence of alternative debt/asset ratios on Ohio farms and examines the relationships of associated factors. An analysis of survey data revealed: (1) diverse ratios on Ohio farms--42 percent of respondents reported zero debt, 71 percent reported a ratio less than 25 percent, and 13 percent reported ratios greater than 50 percent; (2) relationships between debt/asset ratio and operator age, farm size, and percent of land farmed which is owned were statistically significant; (3) major source of income (i.e., farm type) and non-farm income as a percent of family income were not significantly related to debt/asset ratio.

Key words: Debt/asset ratios, financial stress, farmers, farm size, farmer age, owned land.

INTRODUCTION

Concern over the financial position of U.S. farm operators has increased substantially during the past few years. This concern has been translated into several proposed financial aid programs, including one by USDA which is scheduled to be operational by early 1985 (October 27, 1984, Wallaces Farmer). Debate over the merit and potential effect of this program has been extensive. One reason is probably that little is known about the magnitude and extent of the financial stress problem.

Therefore, to obtain a better understanding of the problem, a random sample of Ohio farm operators was surveyed about their debt/asset ratio. Debt/asset ratio is only one of many measures of financial well being. It was selected because debate over the financial well being of farmers has focused on the role of debt and the need to service interest payments on debt. The debt/asset ratio provides an indication of the potential financial burden resulting from debt.

It is important to note that the debt-to-asset ratio which a given farm operator can handle without financial stress depends on many factors. For example, larger, well managed farms, by the very nature of their higher profitability, can generally support higher debt/asset ratios than smaller and/or less well managed farms. Despite this limitation, the debt/asset ratio can provide insight into the degree of financial stress and is frequently used for this purpose.

According to USDA's 1982 State Income and Balance Sheet Statistics, Ohio farm operators had an average debt/asset ratio of 16.2 percent. This ratio was smaller than the 17.9 percent average for the East-North Central region (Ohio, Indiana, Illinois, Michigan, and Wisconsin) and the 18.6 percent average for the U.S. Thus, as a group Ohio farmers were probably less stressed by debt than other sub-regional or U.S. farmers.

The data generated by the Ohio farm operator survey are discussed in this article. While the data are directly representative of Ohio production agriculture, it should also provide insight into the nature of financial stress in U.S. agriculture. The article is divided into a discussion of the survey, general characteristics of survey respondents, and the relationship between debt/asset ratio and selected farm characteristics.

OHIO FARM OPERATOR SURVEY

A random sample of 2000 Ohio farm operators was surveyed during March 1984. Four hundred and twenty-three usable responses were obtained, yielding a 21 percent response rate.

The surveyed operators were asked to report the debt-to-asset ratio and selected farm characteristics, including age, number of acres farmed, percent of acres farmed which are owned, average annual gross farm sales in recent years, most important source of farm income in 1983, and percent of total family income which came from off-farm employment and investments in 1983. Excluding acres farmed and percent of acres farmed which are owned, categories were provided for the responses. Categories were used instead of asking for specific numbers because it was felt that for some characteristics respondents would only be able to provide a general indication of the characteristic and because it was felt that, given the nature of some of the questions being asked, the response rate would be higher if categories were provided.

OVERVIEW OF RESPONDENTS

Respondents generally mirrored the characteristics of Ohio farmers as reported in the 1982 Agricultural Census. An exception was the overrepresentation of large farmers. Average number of acres farmed by the respondents was 372 compared with 175 reported by the Ohio Crop Reporting Service. Seventy-six percent of the respondents farmed less than 500 acres. Nearly half reported $40,000 or less gross farm sales and nearly three-fourths reported $100,000 or less gross farm sales. Respondents were a mixture of crop, dairy, and livestock farmers. Forty-two percent of the survey respondents reported no debt and 71 percent reported a debt/asset ratio of less than 25 percent (Table 1). These respondents are generally considered not to be too highly levered. On the other hand, 13 percent of all respondents are probably financially stressed due to their debt load (i.e., a debt/asset ratio greater than 50 percent). Their farming operations, as currently structured, are unlikely to survive if current economic conditions continue (as expected). They may not be forced from farming, but the financial structure

TABLE 1. DEBT/ASSET RATIO BY AGE
OHIO FARM OPERATORS
MARCH 1984

Operator Age Group	Debt/Asset Ratio (percent) 0	1-25	26-50	51+	Total[1/]
	-- percent of farm operators[2/] --				
Under 35	16	35	24	25	100
35-49	23	33	28	17	100
50-64	49	30	9	11	100
65 or more	78	15	7	0	100
All Operators	42	29	16	13	100

[1/] Percentages may not add to 100 due to rounding.

[2/] Percentages are based on the following number of respondents by age category: under 35, 51; 35-49, 119; 50-64, 166; 65 or more, 72; all operators, 408.

Source: Original data.

of their operation will have to be changed. Lastly, about 16 percent of the respondents are in the middle ground, a debt/asset ratio of 26 to 50 percent. They may be experiencing stress, depending on managerial ability, type of farm, off-farm income, and other factors. Their stress, if any, can probably be resolved, especially be reducing farm debt.

AGE

Young farmers are commonly believed to be more highly leveraged than their middle and older age counterparts. This inverse relationship between age and leverage is strongly supported by the survey data (Table 1). Whereas 25 percent of farm operators younger than 35 reported a debt/asset ratio exceeding 50 percent, none of the farm operators 65 or older reported such a debt/asset ratio. The relationship between age and debt/asset ratio was statistically significant at the one percent level of significance. A similar relationship was found by the 1979 Farm Finance Survey.

While young farmers were more likely to be highly leveraged, the data does not support the contention that a substantial majority of young farm operators are experiencing financial stress. Approximately half of the young farm operators reported a debt/asset ratio of 25 percent or lower. It is thus important to examine the debt stress experienced by individual young farmers within the context of the total young farm operator picture.

FARM SIZE

Several measure of farm size exist. The two used in this study were acres farmed (owned plus rented) and gross farm sales. The data in Tables 2 and 3 support the commonly held opinion that larger farms generally have higher debt/asset ratios than smaller farms. Whereas six percent of the respondents with gross farm sales of $40,000 or less and four percent who farmed less than 100 acres had a debt/asset ratio exceeding 50 percent, 38 percent of respondents with gross farm sales of $200,000 or more and 30 percent who farmed more than 1000 acres had debt/asset ratios exceeding 50 percent. The relationship between both farm size variables and debt/asset ratio was statistically significant at the one percent level of significance. A similar relationship was found by the 1979 Farm Finance Survey.

High debt/asset ratios are not restricted to larger farm businesses. In fact, the absolute number of survey respondents who reported debt/asset ratios exceeding 50 percent does not differ greatly among size categories. For gross sales, the numbers are 12, 15, 9, and 12 operators, respectively, beginning with the $40,000 or less category. The larger farms would, however, generally have higher absolute levels of debt than similarly leveraged smaller farms because their asset base is higher. In addition, if farmers in the smaller gross sales categories are likely to be part-time operators and thus less dependent upon farm income to service their farm debt position (U.S., Department of Commerce). Operators of the larger, more highly levered farm businesses are thus likely to be in a more

TABLE 2. DEBT/ASSET RATIO BY GROSS FARM SALES
OHIO FARM OPERATORS
MARCH 1984

Gross Farm Sales[1/]	Debt/Asset Ratio (percent) 0	1-25	26-50	51+	Total[2/]
	-- percent of farm operators[3/] --				
$40,000 or less	58	26	9	6	100
$40,001 - $99,999	28	34	24	14	100
$100,000 - $199,999	19	39	26	17	100
$200,000 or more	6	25	31	38	100
All Farm Operators	41	30	17	12	100

[1/]Annual gross farm sales in recent years.

[2/]Percentages may not add to 100 due to rounding.

[3/]Percentages are based on the following number of respondents by gross farm sales categories: 40,000 or less, 204; $40,000-99,999, 105; $100,000-199,999, 54; $200,000 or more, 32; and all farm operators, 395.

Source: Original data.

TABLE 3. DEBT/ASSET RATIO BY ACRES FARMED IN 1983
OHIO FARM OPERATORS
MARCH 1984

Acres Farmed[1/]	Debt/Asset Ratio (percent) 0	1-25	26-50	51+	Total[2/]
	-- percent of farm operators[3/] --				
1 - 99	59	24	14	4	100
100 - 249	51	31	7	10	100
250 - 499	25	34	26	15	100
500 - 999	14	33	27	25	100
1000 or more	19	26	26	30	100
All Farm Operators	40	30	17	13	100

[1/]Includes acres idled under government programs.

[2/]Percentages may not add to 100 due to rounding.

[3/]Percentages are based on the following number of respondents by acres farmed categories: 1-99, 109; 100-249, 115; 250-499, 95; 500-999, 51; 1000 or more, 27; and all farm operators, 397.

Source: Original data.

stressful situation than are the similarly leveraged smaller operators because they have a relatively lower proportion of farm cash flow needs covered by non-farm income.

PERCENT OF LAND OWNED

Approximately one-fifth of the Ohio farm operator respondents owned 25 percent or less of the land they farmed, while nearly half (47 percent) owned more than three-fourths of the land they farmed. Operators who owned no more than 25 percent of the land farmed were, surprisingly, almost equally distributed among the debt/asset categories (Table 4). It is, however, not surprising to find the highest incidence of a debt/asset ratio exceeding 50 percent among this group. Generally, the smaller the percent of land farmed which is owned, the smaller the amount of capital owned since land is the major capital input in farming. Consequently, a given level of operating debt translates into a higher debt/asset ratio the smaller the percentage of acres farmed which is owned. The resulting higher debt/asset ratio does not necessarily indicate greater financial stress. The higher debt/asset ratio along with the higher proportion of rented land does, however, suggest that, should farm income decline, farmers who own no more than 25 percent of their land farmed might have difficulty borrowing money relative to farmers who own 75 percent or more of their land farmed.

The distribution of survey respondents among debt/asset categories changed substantially as ownership percentage increased. The likelihood of having a debt/asset ratio greater

TABLE 4. DEBT/ASSET RATIO BY PERCENT OF LAND FARMED WHICH IS OWNED
OHIO FARM OPERATORS
MARCH 1984

Percent of Land Farmed Which is Owned	Debt/Asset Ratio (percent)				
	0	1-25	26-50	51+	Total[1/]
	- - percent of farm operators[2/] - -				
0 - 25	26	23	25	25	100
26 - 50	35	31	18	16	100
51 - 75	25	40	23	12	100
76 - 100	55	30	11	4	100
All Farm Operators	41	30	17	12	100

[1/] Percentages may not add to 100 due to rounding.

[2/] Percentages are based on the following number of respondents by percent land owned categories: 0-25, 87; 26-50, 75; 51-75, 52; 76-100, 187; and all farm operators, 400.

Source: Original data.

than 50 percent declined from 25 to 4 percent as ownership percentage increased from the low group (25 percent or less) to the high group (more than 75 percent). The relationship between percent of land owned and debt/asset ratio was significant at the one percent level of significance. A similar relationship was reported by Musser, White, and Smith.

It is often stated that land ownership has caused much of the current economic stress in agriculture. These data, if debt/asset ratio is a valid indicator of stress, do not support this premise. Instead, a more accurate statement is that recent major land purchases have been the cause of financial stress; this statement is supported by the findings of Musser, White, and Smith.

SOURCE OF FARM INCOME

"Is the financial stress on Ohio's farms concentrated on any particular type of farm as defined by source of farm income?" The survey found that the relative incidence of a debt/asset ratio exceeding 50 percent was essentially the same (about 13 percent) regardless of the type of farm (Table 5). However, because of the larger number of grain farms the actual number of grain farms having a debt/asset ratio exceeding 50 percent was greater than the number of other types of farms.

Taken as a whole, the data suggest that if any relationship exists between source of farm income and debt/asset ratio, it is probably the opposite of what is commonly perceived. That is, a higher percent of grain and cattle/hog farms reported no debt

TABLE 5. DEBT/ASSET RATIO BY MOST IMPORTANT SOURCE OF FARM INCOME
OHIO FARM OPERATORS
MARCH 1984

Most Important Source of Farm Income	Debt/Asset Ratio (percent)				
	0	1-25	26-50	51+	Total[1]
	- - percent of farm operators[2] - -				
Grain	43	27	16	14	100
Hogs/Beef	47	30	11	12	100
Dairy	28	32	26	14	100
Grain/Livestock (50-50)	27	38	22	13	100
Other	53	28	14	5	100
All Farm Operators	41	29	16	13	100

1/ Percentages may not add to 100 due to rounding.

2/ Percentages are based on the following number of respondents by most important source of farm income cateogory: grain, 199; hogs/beef, 65; dairy, 57; grain/livestock, 45; other, 43; and all farm operators, 408.

Source: Original data.

than did dairy and half grain, half livestock farms. This tendency should not be too surprising however. The stability and profitability of the dairy business and the stability resulting from the diversification of a mixed crop/livestock enterprise can allow these farms to assume a higher debt/asset ratio. In contrast, dependence on grain and red meat production requires a lower debt/asset ratio to survive changes in price and quantity produced of the dominant commodity.

NON-FARM INCOME

Non-farm income can affect the debt/asset ratio of farm operators in offsetting directions. On the one hand, non-farm income can permit a farm family to repay its farm debt and/or to increase its financial well being through means other than increasing farm size. Consequently, this line of argument would result in the conclusion that, the greater the proportion of total farm family income accounted for by non-farm income, the lower the debt/asset ratio will be. On the other hand, non-farm income can allow a farmer to live off his non-farm income while the farm income is dedicated to operating and debt service costs. Thus, non-farm income can allow a farmer to use the farm income to acquire more assets. Consequently, this line of argument would result in the conclusion that the greater the proportion of total family income accounted for by non-farm income, the higher the debt/asset ratio will be.

The conflicting lines of argument are reflected in the survey data (Table 6). There is some indication that, as the proportion of total farm family income accounted for by non-farm income increases (i.e., dependence on non-farm income increases), the debt/asset ratio declines. For example, the proportion of operators reporting no debt was greater for operators who reported more than a 50 percent dependence on non-farm income compared with operators who reported less than 50 percent dependence on non-farm income. However, the relationship appears to be weak and therefore probably is not a reliable predictor of debt/asset ratio. A comparable weak relationship was found with the level of off-farm income by the 1979 Farm Finance Survey.

SUMMARY AND CONCLUSIONS

Higher debt/asset ratios on Ohio farms were directly associated with operators who were younger and operated larger farm businesses. A negative relationship was found between percent of land farmed that is owned and debt/asset ratio. Lastly, major source of farm income (i.e., type of farm) and non-farm income as a percent of farm family income did not seem to be a reliable predictor of debt/asset ratio, in particular a high (51 percent of more) debt/asset ratio.

While statistical associations were found between debt/asset ratio and operator age, farm size, and percent of land farmed which is owned, even more striking was the diversity in debt/asset ratios. For all categories of all variables no more than 40 percent of survey respondents reported a debt/asset ratio

TABLE 6. DEBT/ASSET RATIO BY RELATIVE IMPORTANCE OF NON-FARM INCOME
OHIO FARM OPERATORS
MARCH 1984

Non-Farm Income (Percent of Total Family Income)	Debt/Asset Ratio (percent)				
	0	1-25	25-50	51+	Total[1/]
	-- percent of farm operators[2/] --				
0 - 24	37	25	21	18	100
25 - 49	31	36	25	8	100
50 - 74	56	32	8	5	100
75 - 100	46	31	13	10	100
All Farm Operators	42	29	17	13	100

[1/] Percentages may not add to 100 due to rounding.

[2/] Percentages are based on the following number of respondents by non-farm income categories: 0-24, 175; 25-49, 36; 50-74, 66; 75-100, 87; and all farm operators, 364.

Source: Original data.

greater than 50 percent. On the other hand for all categories of all variables, at least 15 percent, with one exception, of survey respondents reported no debt. Compounding this diversity is the observation made in the introduction: a given debt/asset ratio may signal financial stress for one farm business but be consistent with economic health for another farm business.

The diversity in debt/asset ratios and the significance of a given debt/asset ratio probably contributes significantly to the lack of agreement among farm operators and farm groups about the extent, let alone importance, of the current financial stress problem. This lack of agreement makes formation of public policy very difficult. Any resultant public policy is also unlikely to offer significant help to most farm operators in financial difficulty and to be viewed as favoring selected special interests, such as large farmers, poor managers, or land speculators. Furthermore, the discord over financial stress policy may spill over into discord over other farm policy. Thus, unless financial difficulty becomes more widespread among farm operators (which hopefully will not happen) effective farm policy formulation on financial stress would appear to be elusive.

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